Geography and History of the World
Summer Institute Workshop
Unit Plan

An Introduction to World Population

Submitted by: Cheri Hume
July 13, 2007

Overview: This is a two week unit plan for the purpose of introducing students to world population characteristics and distribution.

National Geography Standards addressed:

Standard 1 How to use maps and other geographic representations, tools, and technologies to acquire, process, and report information from a spatial perspective.
Standard 4 The physical and human characteristics of places.
Standard 9 The characteristics, distribution, and migration of human populations on Earth's surface.
Standard 14 How human actions modify the physical environment.
Standard 15 How physical systems effect human systems

Indiana Social Studies Academic Indicators addressed:

Geography and History of the World

3 Students will examine the human geographic factors associated with population characteristics, distribution, and migration in the world and the causes and consequences associated with them.
3.1 Map the distribution of the world's human population for different time periods.
3.2 Identify the push-pull factors that resulted in the migration of human population over time and detect changes in these factors.
3.5 Analyze population trends in the local community and suggest the impact of these trends on the future of the community in relation to issues such as development, employment, health, cultural diversity, schools, political representation, and sanitation. Propose strategies for dealing with the issues identified.
9.2 Identify regional resource issues that may impair sustainability, economic expansion, and/or diversification. Assess the impact of these issues on the physical and human environments of specific regions. Propose strategies for dealing with regional resources issues.
9.3 Identify ways in which humans have used technology to modify the physical environment in order to settle areas in different world regions. Evaluate the impact of these technologies on the physical and human environments affected.

Where On Earth Are All the People

By: Cheri Hume, July 3, 2007, Sheridan, IN

Estimated Sessions: 1 class day (50 minute period)

Grade Level(s): 9th

Purpose: To identify the distribution of the world's population.

National Geography Standards addressed:
Standard 1 How to use maps and other geographic representations, tools, and technologies to acquire, process, and report information from a spatial perspective.
Standard 9 The characteristics, distribution, and migration of human populations on Earth's surface.

Indiana Social Studies Academic Indicators addressed:
Geography and History of the World
3.1 Map the distribution of the world's human population for different time periods.

Objectives: Upon completion of this lesson/activity, students will be able to
1. identify the world's most populous countries and
2. read and understand the world population cartogram.

Background: Students need prior knowledge of how to read cartograms

Materials Required:
- Textbook or handout of Table of Countries for student research
- Labeled outline world map for students to map the top five most populous countries
- Colored pencils to shade the outline map
- Overhead projector and transparency of a cartogram of the world's population to analyze and discuss (Transparency #28 in text support material) or have a hand out for each student

Procedures:
1. Predict: Break the students into pairs. Have the students make a chart with three columns on a piece of paper. In the left column of the chart, have the students rank what they think are the top five most populous countries. In the next column, write the countries total population next to the country. In the third column predict the land size in miles of each country.
    a. Ask the students which countries they listed and why they did so?
2. Compare and Contrast: Have students turn to the Table of Countries in the back of the textbook and review the population and land size data and compare their answers to reality. Correct any misconceptions.
3. Come together as a class and have one student go to the board and write down their revised list. The class will discuss answers.
    a. Which country has the largest population? *(China- with over 1.3 billion people)*
        i. If the world's total population is 6.4 billion how much of the world is Chinese? (*1/6th or 1 out of every 10 people are Chinese*)
    b. Which country has the second largest population? (*India 1-billion people*)
    c. Which country has the third largest population? (*the United States – 300 million*)
    d. Which country has the fourth largest population? (*Indonesia – 238 million*)
    e. Which country has the fifth largest population? (*Brazil-184 million*)
    f. Which countries were left off their original list? Why were they left off?
    g. Of the five which country is largest in land size?
    h. Do you see any correlation between large land size and large population?
4. Mapping: Pass out a labeled outline world map. Have the students shade the top five most populous countries one color they decide. Example: shade all yellow. Add to key.

5. Analyze: After the students are finished shading their map, have the students examine the map and ask the following questions.
    a. What does the map tell you?
    b. Do you see any patterns?
    c. In what hemisphere do most people live?
    d. Which countries lie in the Eastern Hemisphere?
    e. Which countries lie in the Western Hemisphere?
6. Map interpretation: Place the world population cartogram on the projector. Ask students:
    a. The size of a country on this cartogram is not used to show land area. What is it used to show? (*the size of the country is proportional to the country's population*)
    b. What are the largest countries on this cartogram? (*China, India, United States, Indonesia, and Brazil*)
7. Have students study and compare the cartogram to their actual world political map they just shaded. Then ask:
    a. What does Australia's size on the cartogram suggest? (*The population of Australia is small in comparison to the size of its land area*.)
    b. What other countries have a small population and a large land area? (*Canada is a good example*)
    c. What is the largest country in South America on the cartogram? (*Brazil*) How does Brazil's size on the cartogram compare with its size on the world map? (*Brazil is the largest country in South America on both maps*)
    d. Why is the appearance of Bangladesh so different on the cartogram from its appearance on the land-area map?(*Bangladesh has a high population despite its small land area*)
    e. How does Japan's size on the cartogram compare to its size on the land-area map? (It is much larger on the cartogram) What conclusions can you make about the size of communities in Japan? (*Students might say that Japan's communities are probably densely populated and crowded*)
8. Critical Thinking: Predicting Consequences: What problems could a large population in
    a. a small land area cause? (*depletion of natural resources, foreign debt, overcrowding, dependence on imports, migrating population*)
9. Critical Thinking: Identifying Relationships: Why do you think some types of economic activity are associated with lower population densities than others? (*Some activities-such as farming, nomadic herding, and forestry- require large amounts of land but little manual labor because heavy machinery can be used for much of the work*)
10. **Students will keep this map to add to it in a later lesson.**

Assessment:

- Pre-assess through prior knowledge
- Informal assessment through observation of class discussions

Adaptations/Extensions/Call-Out*:* Connecting to world populations through economics.

- ***The World in My Closet: Where do my clothes come from?***
    - Have the students make a three column chart (or have one already made and pass out) categorize each column with the following: pants, shirts, athletic apparel.
    - Acquire information: The students will go home and go through their closet and look at the label on every article of clothing they own and find out what country that piece of clothing came from.
    - Organize information: Record the country under the appropriate category.
    - Analyze information: Determine the top five countries for exporting each categorized apparel and the overall top five producers in all categories
    - Answering the Question: Write a paragraph discussing conclusion made from the information collected and be ready to share with the class. Turn in all fact finding information along with the conclusion paragraph.

Resources: World Geography: Building a Global Perspective, Prentice Hall

Why Do Countries Have Different Populations?

BY: Cheri Hume, July 3, 2007, Sheridan, IN

Estimated Sessions: 2 class day (50 minute period)

Grade Level(s): 9th

Purpose: This is an introduction to key population indicators.

National Geography Standards addressed:
Standard 9 The characteristics, distribution, and migration of human populations on Earth's surface.

Indiana Social Studies Academic Indicators addressed:
Geography and History of the World
3 Students will examine the human geographic factors associated with population characteristics, distribution, and migration in the world and the causes and consequences associated with them.
3.2 Identify the push-pull factors that resulted in the migration of human population over time and detect changes in these factors.

Objectives: Upon completion of this lesson/activity, students will be able to
1. explain population indicators or concepts that effect population,
2. identify countries with long and short life expectancies, and
3. identify push-pull factors associated with population pressure on the land.

Background: Prepare population indicator cards (3"x5") for students. Laminate to maintain for future use.

Materials Required:
- A list of key population indicators to hand out to the students
- 11- 3x5 index cards per student to complete concept cards or tell the students ahead of time to bring their own to class

Procedures:
1. Review: 1) Name the top five most populous countries. 2) According to the population cartogram from yesterday, name two countries where the actual population is larger than the actual land size.
2. Pass out 11 index cards per student and post the list of the following indicator/concepts.
    1. World Population (What is it?)
    2. Average Family Size (Rural v Urban)
    3. Birth Rate (Define)
    4. Death Rate (Define)
    5. Infant Mortality Rate (Define)
    6. Fertility Rate (Define)
    7. Life Expectancy (Define)
    8. Population Growth Rate (Define)
    9. Population Doubling Time (Define)
    10. Population Density (Define)
    11. Population Pressure on the Land (List examples)
3. On the front side of the card the students will write one indicator per concept card
4. Working in pairs, have the students look up the concept meaning/definition in their text book and write the meaning on the backside of the concept card.
5. When complete, as a class comprehensively discuss for each of the indicators.
6. Activity:
    - Go around the room and have each student say a country (no duplicates). They are to write the country on a piece of paper. Go two or three rounds depending on the class size.

- Once each student has three different countries, the students are to turn to the Table of Countries in the back of their textbooks then label and record the first 9 concepts from the list for each country. For the 10th concept, Population Pressure on the Land, the students will speculate what it would be if any based upon the information collected.
- Compare and Contrast the information and decide which country they would rather live and record the rationale.
- From the student generated country list, go around the room and find the top 10 countries with the longest life expectancy and have a student write them on the board. Ask the following questions:
  - Review Location: Of the top 10, how many countries are located in the following continents:
    - Europe?
    - Asia?
    - Africa?
    - North America?
    - South America?
    - Australia?
  - Speculation: Why do you suppose people in these countries live so long? (*Great health care, especially prenatal care*)
  - Speculation: What does a long life expectancy do to the size of a country's population? (*The population grows bigger*)
- On the outline maps, students should shade in the top five countries with the longest life expectancy green. Add to the key.

- Go around the room and find the 10 countries with the shortest life expectancy and have a student write them on the board. Ask the following questions:
  - Review Location: Of the bottom 10, how many countries are located in the following continents:
    - Europe?
    - Asia?
    - Africa?
    - North America?
    - South America?
    - Australia?
  - Speculation: Why do you suppose people in these countries live such a short time? (*Poor medical care, especially prenatal*)
  - Speculation: What does a short life expectancy do to the size of a country's population? (*It reduces the population. Of course a big birth rate can turn it into a big population anyway*)
- On the outline maps, students should shade in the top five countries with the shortest life expectancy blue. Add to the key.

7. Examine the outline map with the three different datasets.
   - Do you see any patterns?
   - What generalizations can you form from this information?

8. Closure: Ask if there are any questions or any concepts that need to be further explained.
   - On the review sheet used at the beginning of class, students will do a quick write based on the given information on their outline map. Students will stating which country would they rather live and why?

Assessment:

- Quick write review from day one's lesson.
- Informal assessment through observation and discussion

Adaptations/Extensions/Call-Out*:* ***NA***

Resources:

1. World Geography: Building a Global Perspective, Prentice Hall
2. U.S. Census Bureau (www.uscensus.gov)
3. Population Reference Bureau (www.prb.org)

GIS and Population Indicators

BY: Cheri Hume, July 3, 2007, Sheridan, IN

Estimated Sessions: 1 class day (50 minute period)

Grade Level(s): 9th

Purpose: This is an introductory look at geodemography and the Internet to use GIS to visually compare population indicators on a global scale.

National Geography Standards addressed:
Standard 1 How to use maps and other geographic representations, tools, and technologies to acquire, process, and report information from a spatial perspective.

Indiana Social Studies Academic Indicators addressed:
Geography and History of the World
3.1 Map the distribution of the world's human population for different time periods. Analyze changes in population characteristic and population density in specific regions.

Objectives: Upon completion of this lesson/activity, students will be able to
1. explore geodemography and use GIS to compare population indicators at a global scale.

Background: This lesson builds upon the previous lessons; students will need the understanding of population indicators and concepts.

Materials Required:
- Computer lab with access to the Internet
- Copies for each student of chapter 7.1 (pages, 92-94) from *Exploring Human Geography with Maps* by Margaret Pearce
- Copies of the seven questions in the assignment directions so the students have a place to answer the questions when they come to it.

Procedures:
1. While in the computer lab, pass out assignment sheet that will direct students to the United Nations Environment Programme (UNEP)'s "GEO Data Portal." (http://geodata.grid.unep.ch/) From here the students can explore different population indicators. For this assignment the focus will be on fertility rate.
2. The seven questions that the students are asked to answer are:
   a. Read the "Abstract" and "Purpose" sections of the metadata. How is fertility rate defined for this data set?
   b. How was the data for fertility rate collected and measured?
   c. Why is fertility rate considered a more useful population indicator than birth rate?
   d. Choose four different time periods from the drop-down menu and analyze what you see. What regional patterns do you find for fertility rate?
   e. Based on these patterns, which countries or regions might you predict to have a decreasing population density?
   f. Browse the estimated infant mortality data between 1950 and 2050. What regional pattern do you see?
   g. Reflect on what you have learned in class about infant mortality rate as a population indicator. If you could look at these two datasets, infant mortality and fertility rate, simultaneously, how would you expect them to correlate? In other words, for a country with a high fertility rate, would you expect infant mortality to be high or low? Explain your reasoning.

Assessment:
- Formal assessment. When the students are finished they will turn in their answer sheets to be graded.

Adaptations/Extensions/Call-Out*:*

1. After finishing examining the fertility rate indicator the students will explore other dataset.
2. The next lesson will explore the world population and the availability of the food supply. The students can get a head start on the concept by exploring world food distribution indicators.
3. In the search the GEO database page enter food
4. Select the Average Total Calorie Supply – per capita (subregional)
5. While in the Metadata read the "abstract" and "Purpose"
6. Then compare maps and charts with different countries from different time periods.
7. The students will write a paragraph generalizing what they found.

Resources:

- *Exploring Human Geography with Maps* by Margaret Pearce

We Are the World and We Are Hungry

BY: Cheri Hume, July 3, 2007, Sheridan, IN

Estimated Sessions: 1 class day (50 minute period)

Grade Level(s): 9th

Purpose: This lesson is a simulation that will give the students a better understanding of the distribution of population among continents verses the distribution of the world food supply.

National Geography Standards addressed:
Standard 14 How human actions modify the physical environment.
Standard 15 How physical systems effect human systems

Indiana Social Studies Academic Indicators addressed:
Geography and History of the World
9.2 Identify regional resource issues that may impair sustainability, economic expansion, and/or diversification. Assess the impact of these issues on the physical and human environments of specific regions. Propose strategies for dealing with regional resources issues.
9.3 Identify ways in which humans have used technology to modify the physical environment in order to settle areas in different world regions. Evaluate the impact of these technologies on the physical and human environments affected.

Objectives: Upon completion of this lesson/activity, students will be able to
1. identify the regions scarce food supply and
2. propose strategies to correct the imbalance of the world food distribution.

Background: This lesson builds upon world population distribution ideas and concepts previously learned.

Materials Required:
- This simulation requires 26 students, a calculator, 2 bags of Hershey's kisses and continent name tags wadded up (2-N. America, 2-S America, 3-Europe, 4-Africa, 15-Asia) -- if more than 25 students add 1-Food distributor for every student over 25).

Procedures:
1. Instruct: There are 6 billion people in the world. To this point we examined population and distribution among countries and continents and some concepts that affect population. Now we are going to look at population distribution among continents and the ability to feed all the people. The class will help out with this simulation.
2. Write on the board or put on overhead, the following statistics:
   Six Billion people breaks down to the following:
   - North America: 508,915,979 = 8%
   - South America 366,803,836 = 6%
   - Europe 729,389,373 = 11%
   - Africa 873,742,214 = 14%
   - Asia 3,866,437,804 = 61%
3. We are the world. The students will represent the percentages of each continent making up the total percentage of the world population.
4. Ask the students if anyone can explain how to figure this out? (% x # of students)
5. Have the students figure how many of them belong to each continent.
   - 2 students would live in N. America (.08 x25 = 2 = 2 students)
   - 2 students would live in South America (.06 x 25 = 1.5 = 2 students)
   - 3 students would live in Europe (.11 x 25 = 2.75 = 3 students)
   - 4 students would live in Africa (.14 x 25 = 3.5 = 4 students)

- 15 students would live in Asia (.61 x 25 = 15.25 = 15 students)

6. Break the students into continents. Countries do not always get along with each other. Distribute 1 continent labeled paper wad to each student. Break the students into 4 groups scattered around the class. When every one is in place the students will have a paper wad fight among the other groups. When the teacher has had enough stop the fighting and tell each person to pick up a paper wad and go back to their seats. Each student will open their paper wad and find which continent they belong to.
7. Have each continent group together, clustered in different areas the classroom. Everyone must stand up.
8. The food distributors (or teacher if no extra students) will pass out the Hershey's Kisses representing the world food supply. Once they pass out the food the ones who did not receive any must remain standing while the ones with the food will get to sit down and eat.
9. The food distributor will take one bag of Hershey's Kisses and distribute as follows
    - The North Americans receive half the bag (every one sits down and eat s)
    - The Europeans receive half the bag (everyone sits down and eats)
10. The food distributor will take the second bag of Hershey's Kisses and distribute it as follows:
    - 1 African receives no Hershey's Kisses because 1 out of 3 Africans go to bed hungry. One African must stand and watch the others eat
    - 3 Asians receive no Hershey's Kisses because 1 out of 5 Asians go to bed hungry, Three Asians must stand and watch the others eat.
    - One South American does not receive any and the other one receives only a couple of Hershey's Kisses because 1 out of 8 South Americans go to bed hungry
11. After the food has been distributed, review the total population numbers of each continent that had been posted on the board or overhead and add the ratio that go to bed hungry.
    - Africa 873,742,214 = 1 out of 3 go to bed hungry
    - Asia 3,866,437,804 = 1 out of 5 go to bed hungry
    - South America 366,803,836 = 1 out of 8 go to bed hungry
12. Using the information, ask the students to figure the total number of population in each continent that go to bed hungry.
    - *(The one African standing represents 291,247,405 people who go to bed hungry)*
    - *(The three Asians standing represents 773,287,561 people who go to bed hungry)*
    - *(The one South American standing represents 45,850,480 people who go to bed hungry)*
13. Students will return to their seats and take out a piece of paper and answer the following questions:
    - Where do most people live? (*Over half in Asia*)
    - Where is there a surplus of food? (*N. America and Europe, where farmers are high-tech*)
    - Where is there a shortage of food? (*Africa, Asia, and S. America. Farmers are low-tech*)
    - Where are the worst food shortages? (*Africa – the only continent with two giant deserts*)
    - If Africa and Europe have the roughly around the same populations, then why is one hungry and the other not? (*Africa's population is growing faster than its food production. Africa has two deserts and a rainforest that cannot produce food. Farming is more high tech in Europe with land capable of producing more food*)
    - What can be done to help the people going to bed hungry? (*Europe and N. America could share their food. Africans and Asians could increase their food production by using fertilizer to improve soil, irrigate to water the crops and use high tech machines to do the work)*
    - What else can be done? (*In the long range, a country's population should be roughly equal to its food production. In the short range the U.S. sends food to Africa, Asia, and South America*)
14. Students will turn in their answers. After all have been collected discuss the questions and answers.

Assessment:

- Informal assessment by reading through student answers and checking for participation and understanding.

Adaptations/Extensions/Call-Out - *NA*

Resources:

- This lesson plan was derived from "Country Comparisons" Workbook: BQ-4336- Updated January 2005 (Performance Education)

What is a Population Pyramid

BY: Cheri Hume, July 3, 2007, Sheridan, IN

Estimated Sessions: 1 class day (50 minute period)

Grade Level(s): 9th

Purpose: This lesson introduces the concept of population pyramids.

National Geography Standards addressed:
Standard 1 How to use maps and other geographic representations, tools and technologies to acquire, process, and report information from a spatial perspective.
Standard 4 The physical and human characteristics of places.
Standard 9 The characteristics, distribution, and migration of human populations on Earth's surface.

Indiana Social Studies Academic Indicators addressed:
Geography and History of the World
3.1 Map the distribution of the world's human population for different time periods. Analyze changes in population characteristics and population density in specific regions.

Objectives: Upon completion of this lesson/activity, students will be able to
1. explain population pyramids and
2. make generalizations based upon the shape of a population pyramid model.

Background: This lesson builds upon the previous introduction to population and demographics lessons.

Materials Required:
4. Graphing paper for each student to practice graphing
5. "Population Pyramid" article by *Pennsylvania Department of Health***;** Health Statistics - Technical Assistance Tools of the Trade

Procedures:
1. Review Population Indicator. Read the following statements and have the students write the concept it describes.
   a. In Bangladesh, out of 1,000 people, 30 babies are born. In the U.S., 14 babies are born. (*Birth Rate*)
   b. In Spain: out of every 1,000 people, 10 babies are born and 10 will die of old age. (*Zero population growth*)
   c. A baby boy born in China lives to be 70. A baby born in Guinea-Bissau lives to be 45. (*Life Expectancy*)
   d. In Rwanda, out of every 1,000, babies, 102 die. In the U.S. 7 babies will die. (*Infant mortality rate*)
   e. Kenya's population will double in 33 years. The U.S. will double in 143 years. (Population *Doubling Time*)
   f. Somalia's population increases 3% a year, while the U.S. grows at less than 1%. (*Population Growth Rate*)
   g. Mexico City is the most populous city in the world. Water is sometimes too polluted to drink and the air too polluted to breathe. (Population pressure on land)
   h. The world has 6 billion people. How much is one Billion? Well, if you rich uncle left you $1 billion (on the condition that you count it at a dollar a second, 8 hours a day), would you accept the money? Why or why not? (*You'd better not: At that rate it would take you 95 years*!)
2. Trade papers and go over answers. Hand back to students and keep for later use.
3. Instruct: We have determined the world population distribution according to continents and the top individual most populous countries and we explored some of the factors that determine a country's populations. We are now going to examine individual country's population structure. We are going to examine Population Pyramids.
4. Speculate: On the same piece of paper used earlier, write Population Pyramid and describe what it is.

5. Have the students discuss their answers.
6. Explain Population Pyramids are a visual and graphic way to study, compare,
7. and analyze population growth of various countries throughout the world. Population Pyramids are age structure diagrams that allow users to compare population distributions by age and sex to make generalizations of the world's population growth.
    a. Explain that the graphed data will form a shape that will have meaning.
        - "Pyramid means poor"
            - Lots of Babies
            - Few seniors
            - Workers have a tough time supporting all those babies
        - "Straight and shapeless means rich"
            - Medium babies
            - Medium seniors
            - Medium workers
            - A population that has no bulges- it is steady and predictable
8. Pass-out copies of **POPULATION PYRAMIDS** article by ***Pennsylvania Department of Health***; **Health Statistics - Technical Assistance Tools of the Trade** (attached) read and discuss the meaning of the different shapes of pyramids together as a class.

9. Closure: On the same piece of paper from the opener, write three things that you learned and something that you need or want more information.

Assessment:

- Formal assessment with opening review quiz
- Informal assessment through observation, discussions, and quick write

Adaptations/Extensions/Call-Out*:* ***NA***

Resources:

6. The United States Census Bureau Website at www.census.gov
7. "Population Pyramid" article by *Pennsylvania Department of Health***;** Health Statistics - Technical Assistance Tools of the Trade http://www.health.state.pa.us/hpa/stats/techassist/pyramids.htm

Pennsylvania Department of Health

Health Statistics - Technical Assistance
Tools of the Trade

(717)783-2548

POPULATION PYRAMIDS

There are many different ways to graphically present population data. However, the use of a population pyramid is considered the best way to graphically illustrate the age and sex distribution of a given population. A population pyramid, using a paired bar chart-type graphic, shows the numbers or percentages of males and females in each age group. This type of graphic provides a very clear picture of a population's age-sex composition. It can also be used for displaying future trends in a population.

The fertility rate of a population is the single most important influence on the shape of a population pyramid. The more children per parent, the broader will be the base of the pyramid. The median age of the population will also be younger. Mortality will also have an influence on the shape; however, it will be far less important an influence than fertility but also somewhat more complex. One would assume that lower mortality rates in a population would result in an older age distribution. However, just the opposite is true -- a population with lower mortality rates will display a slightly younger age distribution. This is due to the fact that any -disparities in the mortality rates of a population are more likely a result of variations within the younger age groups (usually infants and children).

There are generally three types of population pyramids created from age-sex distributions--expansive, constrictive and stationary. Examples of these three types of population pyramids appear at the end of this report. Definitions of the three types follow:

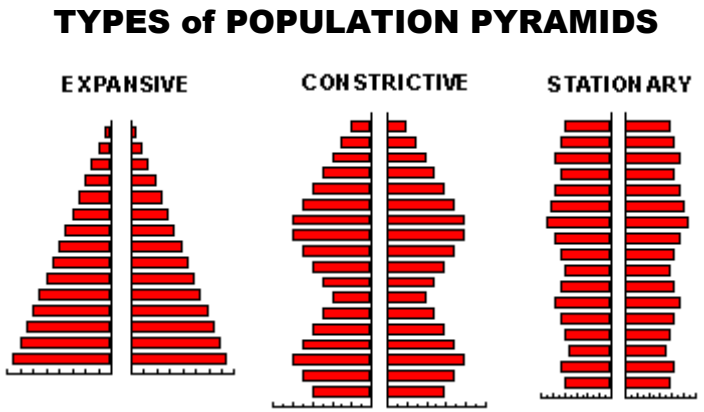
1. EXPANSIVE population pyramids show larger numbers or percentages of the population in the younger age groups, usually with each age group smaller in size or proportion than the one born before it. These types of pyramids are usually found in populations with very large fertility rates and lower than average life expectancies. The age-sex distributions of Latin American and many Third World countries would probably display expansive population pyramids.

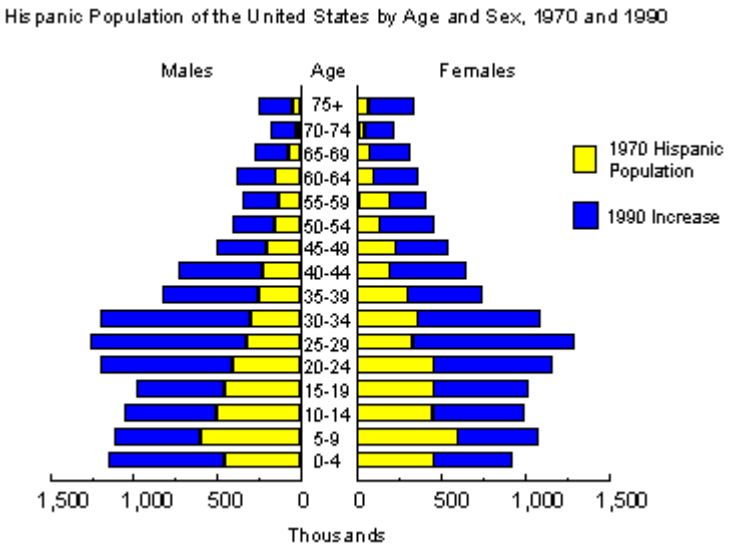
2. CONSTRICTIVE population pyramids display lower numbers or percentages of younger people. The age-sex distributions of the United States and Pennsylvania fall into this type of pyramid.

3. STATIONARY or near-stationary population pyramids display somewhat equal numbers or percentages for almost all age groups. Of course, smaller figures are still to be expected at the oldest age groups. The age-sex distributions of some European countries, especially Scandinavian ones, will tend to fall into this category.

Population projections (or percentages of population growth or decline over periods of time) can also be plotted and displayed on a pyramid along with the current or historical population figures, thus allowing for easy comparison of future or-historical trends. This type of pyramid is especially dramatic when large, consistent increases or decreases occur. On the next page is an example of this type of population age pyramid. The age-sex distribution of the Hispanic population in the United States according to 1970 census figures are shown along with the increase for each age-sex population segment according to 1990 census figures. The increases are quite dramatic. Also, one should note that the 1970 Hispanic population pyramid is an expansive type whereas the 1990 pyramid is more of a constrictive type.

Population pyramids are quite handy tools when working with age-sex distributions and should be used as often as possible. They provide very effective graphic presentations. Probably their greatest asset is that they are so easily understandable to almost everyone, regardless of statistical skills.





Graphing Population Pyramids

BY: Cheri Hume, July 3, 2007, Sheridan, IN

Estimated Sessions: 1 class day (50 minute period)

Grade Level(s): 9th

Purpose: This lesson is designed to teach the student how to plot age/sex data into a population pyramid model.

National Geography Standards addressed:
Standard 1 How to use maps and other geographic representations, tools, and technologies to acquire, process, and report information from a spatial perspective.
Standard 3 How to analyze the spatial organization of people, places, and environments on Earth's surface.

Indiana Social Studies Academic Indicators addressed
Geography and History of the World
3.1 Map the distribution of the world's human population for different time periods. Analyze changes in population characteristics and population density in specific regions.
9.2 Identify regional resource issues that may impair sustainability, economic expansion, and/or diversification. Assess the impact of these issues on the physical and human environments of specific regions. Propose strategies for dealing with regional resources issues.

Objectives: Upon completion of this lesson/activity, students will be able to
1. explain population pyramids,
2. gather and plot population age/sex data, and
3. compare future or-historical trends.

Background: This lesson builds upon the understanding of population pyramid structure and meanings.

Materials Required:
8. Grid paper for each student
9. Hand out for each student of the Male/Female population statistics for the United States and a completed 2000, 2025 and 2050 U.S. population pyramid models on transparency (both information can be obtained from the U.S. Census Bureau website – www.uscensus.gov) these will be used to walk through the process of graphing a population pyramid.
10. Overhead projector.

Procedures:
1. **Opening Review Quiz:** You can tell a lot about a country's current events simply by looking at the shape of its population. Shapes can tell you secrets…
2. Pass out grid paper. Draw freehand and answer the following questions:
   a. Draw the shape of a rich country which is having a baby boom.
   b. (*Shapeless, except lots of 0-4 years old*)
   c. Draw the shape of a poor country which has had a civil war.
   d. (*Pyramid with few in the fighting age*)
   e. Draw the shape of a poor country which has had an epidemic among babies.
   f. (*Pyramid with very few babies*)
   g. Draw a rich country which has excellent health care for senior citizens.
   h. (*Shapeless: same # for every age group*)
   i. Draw a rich country which has excellent health care for senior citizens.
   j. (*Pyramid with few 0-4 and 6-9 year olds*)
   k. Draw a poor country where the workers have migrated to other countries.
   l. (*Pyramid with few 15-50 year olds*)

3. When everyone is finished have 6 volunteers to go to the board and recreate their chart. Discuss each individually and make corrections if needed. Have the students check their answers.

4. Explain to the class they will be making population pyramid models to analyze the U.S. population models.

5. Pass-out grid paper (or pre-made blank computer generated population pyramid grid) and a copy of the United States IBD aggregation data by age and sex for the years 2000, 2025, 2050.(obtained from the U.S. Census Bureau)

6. The students will plot this information on three different charts

7. When the students have completed their three population pyramids. Display the completed models from the U.S. Census Bureau so the students can check their models.

8. Using the information learned from the previous lesson, discuss the meaning of each of the three shapes from the different time periods to predict future and past trends.

9. Closure: Quick write: on the same grid paper used for their population pyramids, the students will explain a population pyramid, name the type of pyramids and their meanings. Then explain how a population pyramid model is a useful tool.

Assessment:

- Students will self-assess through the opening review quiz.
- Informal assessment through closing quick write.

Adaptations/Extensions/Call-Out*:*

- Integrating technology- Instead of passing out a copy of the U.S. population data sheet, go to the computer lab and have the students go to the U.S. Census Bureau website and surf the site to find the information for themselves.

Resources:

- U.S. Census Bureau @www.census.gov

Baby Boomers and the Big Bulge

BY: Cheri Hume, July 3, 2007, Sheridan, IN

Estimated Sessions: 1 class day (50 minute period)

Grade Level(s): 9th

Purpose: To give a visual hands-on simulation for a better understanding of what happens in a society when they have a bulge in their population pyramid.

National Geography Standards addressed:
Standard 4 The physical and human characteristic of place.

Indiana Social Studies Academic Indicators addressed:
Geography and History of the World
3.5 Analyze population trends in the local community and suggest the impact of these trends on the future of the community in relation to issues such as development, employment, health, cultural diversity, schools, political representation, and sanitation. Propose strategies for dealing with the issues identified.

Objectives: Upon completion of this lesson/activity, students will be able to
1. identify and explain the effects of a baby boom over time.

Background:
- This lesson builds upon the study of the population pyramid of the United States.
- Prior knowledge of developed, developing, underdeveloped countries would be useful.

Materials Required:
- For this simulation you can use one or more groups. For two groups you will need:
  - Pantyhose – cut both legs off at both ends
  - Two large grapefruit (representing baby boomers)
  - Two large bags of peanuts representing the rest of the population)
  - Each student will use their U.S. population pyramid models they produced from the day before for reference.

Procedures:
1. Review the U.S. population pyramid models produced from the day before.
2. Instruct: Being a developed country, we are not suppose to have a BIG BULGE. We do because of the Baby Boom – the great number of babies born between 1945 and 1965. The following exercise shows you why the most developed countries do not want to have a baby boom.
   - Once upon a time, when World War II was over, soldiers came home, got married, and Mom raised a bunch of kids. As you can see from the chart you produced, there is a bulge in the middle. These are the Baby Boomers, now 40-60 years old.
3. Simulation: As for four volunteers, two groups of two. Each group will do the same thing.
   - Step one: Put the grapefruit in the middle of the pantyhose leg. Put a bunch of peanuts on top of it. Ask a short student to hold the pantyhose from the bottom, so the grapefruit does not fall out. Ask a tall student to hold the pantyhose from the top.
     - Ask: When the Boomers were first born, what did the nation's families spend their money on? (*Hospital bills, diapers, cribs, baby carriages, baby toys, etc.*)
   - Step two: Ask the lower student to push the grapefruit up, add some peanuts below it, hold the thing upright.
     - Ask: When the Boomers became teenagers, what did the nation spend its money on? (*Schools, teachers, televisions, saddle shoes, bicycles, baseball cards, hoola hoops, Fizzies, and Kool-Aid, plastic swimming pools, dentist, Barbie dolls, etc.*)

- Step three: Ask the lower student to push the grapefruit up, add more peanuts below, hold the thing upright.
    - Ask: When the Boomers became teenagers what did the nation spend its money on?
      (*Records, record players, movies, poodle skirts, bikinis, French Fries, etc. Mothers started to work to pay the bills*)
- Step four: Ask the lower student to push the grapefruit up, add more peanuts below, hold the thing upright.
    - Ask: When the Boomers entered the job market, what happened?
      (*There were too many people for too few jobs. Wages dropped significantly. People spent their money on houses, cars, stereos, etc.*)
- Step five: Ask the lower student to push the grapefruit up, add more peanuts below, hold the thing upright.
    - Ask: Today, as the Boomers have hit middle age, what does the nation spend its money on?
      (*Houses, cars, motorboats, RV campers, vacations, spa resorts, and face lifts*)
    - On January 1, 1996 the Baby Boomers began turning 50. Every 30 seconds a boomer has a birthday.
- Step six: Take out half the peanuts at the top and push the grapefruit to the very top. Add peanuts below.
    - In the year 2020, the Boomers will retire. Then what will YOU be spending YOUR money on?
      (*the Boomers' Social Security checks, nursing homes, false teeth, elder care, etc*.)
    - When the Boomers die, there will be a surplus of houses and stocks for sale. There will not be enough people to buy them. These will drop in value. The peanuts may inherit peanuts.
- Conclude the simulation by having the students answer the following questions on an exit ticket.
    - Which is better – having a baby boom or not having one?
      (*Not having one. It is a pain to push that grapefruit upward toward the top of the pyramid.*)
        - So is it better to live <u>before</u> or <u>after</u> a baby boom? (*Before. After a baby boom, the resources go to the Boomers. It puts a strain on future generations. The grapefruit crushes the peanuts <u>below</u> it.)*
        - Collect the exit ticket from each student then go over the answers as a class.

Assessment:

- Informal assessment through the exit ticket to check for understanding.
- The students will self assess their understanding when we discuss the answers to the concept in class.

Adaptations/Extensions/Call-Out*:*

- Students research the demographic profiles of a neighborhood in a large urban center or community; retrieving data that will help them analyze the job market for babysitters. They will develop a better understanding of how population dynamics can affect them, either directly or indirectly.

Resources:

- This lesson plan was derived from "Country Comparisons" Workbook: BQ-4336- Updated January 2005 (Performance Education)

INTRODUCTION TO WORLD POPULATION
UNIT ASSESSMENT

1. What is the total world population?

2. Identify the most populated continent.

3. Identify the top 5 most populated countries.
    1.
    2.
    3.
    4.
    5.

4. Using the following data, calculate each country's population density and rank the countries with the highest population density to the lowest.

Country	Land Area (sq. miles)	Population (millions)	Population Density	Rank
Russia	6,592,819	146.9	_____	_____
Brazil	3,300,154	169.8	_____	_____
United Kingdom	94,548	59.0	_____	_____
Japan	145,869	125.9	_____	_____

5. Explain consequences resulting from a large population in a small land area.

6. Identify the continent that can not produce enough food supply to feed its population resulting in the highest percentage of people that go to bed hungry?

7. Identify the continent that can not produce enough food supply to feed its population resulting in the largest total population of people that go to bed hungry?

8. Identify the population indicator that is being described for each of the following statements:
    1. In Nicaragua, out 1,000 people 36 babies are born.

    2. In Bolivia, out of 1,000 babies born, 64 babies will die.

    3. In Slovakia, out of every 1,000 people 10 babies are born and 10 will die of old age.

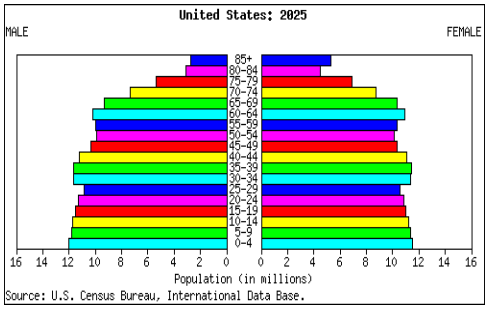
9. Identify the variables used in a population pyramid?

10. a. Describe the characteristics of a society where the population pyramid shows larger numbers or percentages of the population in the younger age groups, usually with each age group smaller in size or proportion than the one born before it.

    b. Where is this type of population living?

11. Describe the characteristics of a constrictive population pyramid.

12. Examine the population pyramid below. A) identify the type and B) describe the characteristics of its population.



A) _____

B) _____

_____

_____

_____

13. Using the data below, construct a population pyramid then answer questions 14-16.

Age	Male	Female
0 – 4	9,831,175	9,386,999
5 - 9	10,488,829	9,994,277
10- 14	10,560,818	10,047,597
15- 19	10,412,689	9,837,270
20- 24	9,821,860	9,363,203
25- 29	9,785,399	9,531,418
30- 34	10,372,884	10,214,189
35- 39	11,304,995	11,343,359
40- 44	11,179,973	11,355,395
45- 49	9,959,477	10,271,081
50- 54	8,706,996	9,083,620
55- 59	6,553,207	7,005,944
60- 64	5,165,703	5,699,027
65- 69	4,402,844	5,131,111
70- 74	3,904,321	4,945,625
75- 79	3,051,227	4,374,151
80+	3,093,305	6,158,663

14. Identify the type and describe the characteristics of this population pyramid.

15. Currently, where can you find a society depicting these characteristics?

16. Explain future ramifications on society according to this model.